




Reliability of a Bahasa Melayu language version of the MOS 36-item short-form health survey (SF-36) in patients with low vision

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ABSTRACT

Background: The MOS 36-Item Short-Form Health Survey (SF-36) Bahasa Melayu language version is widely used to determine the health outcomes in Malaysia. Low vision is a condition where vision cannot be restored and vision rehabilitation is required to overcome the challenges it imposes. The SF-36 Bahasa Melayu language version can be used to measure the health outcomes among low-vision patients. However, little information is available among low-vision patients. This study aimed to assess the reliability of the SF-36 Bahasa Melayu language version among low-vision patients.

Methods: Fifty low-vision patients aged 14 to 74 years (mean \pm standard deviation: 44.58 \pm 18.70 years) were randomly selected. All low-vision patients were interviewed twice by the same interviewer with a 2-weeks interval.

Results: The SF-36 Bahasa Melayu language version showed acceptable and good Cronbach's alpha values of 0.68, 0.67, 0.76, 0.72, 0.73, 0.75, 0.72, 0.73 for physical function, role-physical, body pain, general health, vitality, social functioning, role-emotion, and mental health, respectively, in the first interview. The second interview also revealed similar Cronbach's alpha values. The SF-36 Bahasa Melayu language version also showed a good repeatability between the first interview and the second interview, with Pearson's correlation coefficients ranging from 0.6 to 0.9.

Conclusions: From this study, it can be concluded that the SF-36 Bahasa Melayu language version is reliable and repeatable. It is a useful tool to measure health outcomes among Malaysian low-vision patients. However, a future study of low-vision patients from the rural population and age groups representing the youth, working adults, and older individuals is necessary to obtain better outcomes of SF-36 in Bahasa Melayu language-based information on the health status of low-vision patients.

KEY WORDS

SF-36 Bahasa Melayu language version, low vision, reliability, visual impairment, health outcomes, visual rehabilitation, Bahasa Melayu

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INTRODUCTION

Low vision is defined when a person's vision is less than 6/18 visual acuity to light perception, with the best possible correction in both eyes, or a visual field size of less than 10 degrees from the point of fixation, with the best possible correction in both eyes [1]. A person with

low vision uses their residual vision for the planning and/or execution of a task in daily activities. This condition involves permanent visual impairment. Low vision normally has a profound impact on quality of life due to the severity of the visually impaired experience that affects movement, daily visual tasks, social functioning,



and psychological well-being [2, 3]. In Malaysia, the low vision prevalence was 2.4% and uncorrected refractive errors were one of the leading causes of low vision [4].

In addition to focusing on their vision, it is wise to study the impact of this condition on the general health-related quality of life (HRQoL) of people with low vision. HRQoL can be defined as an individual's satisfaction or happiness with domains of life as far as they affect or are affected by health [5]. To date, various questionnaires have been developed to evaluate HRQoL, of which the MOS 36-Item Short-Form Health Survey (SF-36) has been extensively used and tested worldwide. It has been translated into different languages under the International Quality of Life Assessment (IQOLA) project [6, 7]. In this study, SF-36 was chosen as a generic outcome to measure sickness [6]. The survey has 36 selected items representing eight health area concepts. These areas include general health, health perceptions, physical functioning, social and role functioning, energy, fatigue, pain, and mental health [6]. Previous studies have reported that the SF-36 is a sensitive tool that can be used to measure health outcomes and changes in numerous diseases [5, 6, 8].

In Malaysia, the SF-36 has been translated into Bahasa Melayu. This translation has been validated, and the reliability of the SF-36 in the Malaysian context has been published elsewhere [9]. Malaysian population norms for HRQoL status ascertained using the SF-36 Bahasa Melayu language version were also published previously [10]. However, to the best of our knowledge there is no published information on HRQoL for Malaysian low-vision patients assessed using the SF-36 Bahasa Melayu language version. In this paper, we present a survey of the HRQoL of Malaysian low-vision patients ascertained using the SF-36 Bahasa Melayu language version.

METHODS

This was a cross-sectional study. The study population included patients with low vision in Malaysia, and the sampling frame included patients with low vision in Klang Valley, Kuala Lumpur, Malaysia. This study was conducted at the Low Vision Clinic, Universiti Kebangsaan Malaysia (UKM), from January to December 2017. The inclusion criteria for this study were low-vision patients registered with the Social Welfare Department and visual acuity worse than 6/18 (0.5 logMAR) until 6/120 (1.3 logMAR) using Snellen notation. The level of vision was extracted from the patients' files using best-corrected eyes. The visual acuity results were converted to logarithm of the minimum angle of resolution (LogMAR) notation and recorded. In addition to visual acuity, age, gender, ethnicity, and causes or diagnosis of patients with low vision were also recorded. The level of education was

categorized as primary school, secondary school, certificate, diploma, and degree levels. Certificate referred to a short-term course of less than 2 years, while degree implies an undergraduate degree and above. All patients with low vision and the parents or caretakers (for low-vision patients under 18 years of age) provided written informed consent to participate in the study. This study was approved by the Research and Ethics Committee of Universiti Kebangsaan Malaysia (UKM 1.5.3.5/244/NN0972009) and followed the tenets of the Declaration of Helsinki.

In this study, the SF-36 Bahasa Melayu language version was administered to 50 patients with low vision. These patients were randomly selected and had an acceptable command of the Bahasa Melayu language. Their ages ranged between 14 and 74 years. The survey was conducted via telephone or face-to-face interviews [11].

The SF-36 Bahasa Melayu language version was first translated by researchers from the Universiti Sains Malaysia [9]. However, between 1999 and 2000, a group of researchers from the Institute of Public Health adapted and modified the translated version, replacing a few Malay words for better understanding. This modified version was validated and published elsewhere [9]. The modified questionnaire was used in this study.

All the patients were interviewed twice by the same interviewer. Thirty-six questions were asked in the Bahasa Melayu language. Two weeks later, the same interviewer conducted a second interview using the same questionnaire. For all domains, the scores were calculated using the outline of an earlier published study [5]. Each of these subscales was scored from 0 to 100, where 0 indicates the worst health condition and 100 indicates the best health condition. Reliability analysis was first carried out using Cronbach's alpha values in both interviews, while repeatability was analyzed using Pearson's correlation coefficients. Statistical analyses were performed in SPSS Statistics for Windows, version 16.0, SPSS Inc., Chicago, Ill., USA).

RESULTS

Fifty low-vision patients aged 14–74 years, with a mean age of 44.58 ± 18.70 years, participated in the study. The Malay ethnic group was the largest, followed by the Chinese ethnic group (Table 1). More male than female patients with low vision participated. Cataract was the major cause of low vision among patients. Table 1 shows the demographic information of the study participants. The mean visual acuity for the best-corrected eye was 0.91 ± 0.26 LogMAR. Table 2 shows that all scales had good reliability, most of which exceed the recommended Cronbach's alpha value of 0.70, except for physical



function (PF) and role physical (RP). The SF-36 Bahasa Melayu language version had acceptable and good Cronbach's alpha values of 0.68, 0.67, 0.76, 0.72, 0.73, 0.75, 0.72, and 0.73, for PF, RP, body pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotion (RE), and mental health (MH), respectively.

Similarly, Table 3 shows good reliability in all scales, exceeding the recommended Cronbach's alpha value of 0.70, except for PF and RP. The SF-36 Bahasa Melayu language version had acceptable and good Cronbach's

alpha values of 0.67, 0.70, 0.76, 0.72, 0.74, 0.73, 0.75, and 0.75, respectively, for PF, RP, BP, GH, VT, SF, RE, and MH, respectively. Table 4 shows a moderate to high positive correlation between the first and second interviews. The correlations between each component were all greater than 0.50. The Pearson correlation coefficient of PF was 0.86 ($P < 0.001$), RP was 0.90 ($P < 0.001$), BP was 0.69 ($P < 0.001$), GH was 0.83 ($P < 0.001$), VT was 0.74 ($P < 0.001$), SF was 0.60 ($P < 0.001$), RE was 0.76 ($P < 0.001$), and MH was 0.81 ($P < 0.001$).

Table 1. Demographic information of low-vision patients in the study.

Table 2: Demographic information of low vision patients in the study.

Parameters	Number	Percentage	
Age Group (Year)			
10–19	5	10	
20–29	10	20	
30–39	7	14	
40–49	4	8	
50–59	9	18	
60–69	11	22	
70–79	4	8	
Gender			
Female/Male	20/30	40/60	
Ethnic			
Malay	40	80	
Chinese	7	14	
Indian	1	2	
Others	2	4	
Education Level			
Primary School	5	10	
Secondary School	28	56	
Certificate (a short-term course < 2 years)	13	26	
Diploma	3	6	
Degree (an undergraduate degree and above)	1	2	
Diagnosis			
Cataract	12	24	
Glaucoma	6	12	
Macular degeneration	5	10	
Diabetic retinopathy	4	8	
Macular dystrophy	4	8	
Retinitis pigmentosa	4	8	
Optic atrophy	3	6	
Stargardt’s disease	2	4	
Albino	2	4	
Retinopathy of prematurity	2	4	
Retinal hypoplasia	1	2	
Optic neuritis	1	2	
Optic neuropathic	1	2	
Degenerative myopia	1	2	
Others	2	4	
Visual Acuity of Best Corrected Eyes:			
Snellen notation	LogMAR (logarithm of the minimum angle of resolution)		
6/120	1.3	6	12
6/96	1.2	5	10
6/75	1.1	7	14
6/60	1.0	5	10
6/48	0.9	5	10
6/38	0.8	5	10
6/30	0.7	6	12
6/24	0.6	7	14
6/18	0.5	4	8
6/15 or better	0.4 or better	0	0



Table 2. Reliability analysis between the MOS 36-Item Short-Form Health Survey (SF-36) Bahasa Melayu language version scales for the first interview.

Scale	PF	RP	BP	GH	VT	SF	RE	MH
Physical Functioning (PF)	(0.68)							
Role-Physical (RP)	0.762	(0.67)						
Bodily Pain (BP)	0.201	0.390	(0.76)					
General Health (GH)	0.399	0.466	0.262	(0.72)				
Vitality (VT)	0.305	0.307	-0.120	0.277	(0.73)			
Social Functioning (SF)	0.242	0.302	0.235	0.332	-0.110	(0.75)		
Role-Emotional (RE)	0.402	0.455	-0.094	0.358	0.425	0.178	(0.72)	
Mental Health (MH)	0.293	0.241	-0.173	0.221	0.648	0.015	0.547	(0.73)

Note: Values within parentheses indicate Cronbach's alpha value for each scale

Table 3. Reliability analysis between the MOS 36-Item Short-Form Health Survey (SF-36) Bahasa Melayu language version scales for the second interview.

Scale	PF	RP	BP	GH	VT	SF	RE	MH
Physical Functioning (PF)	(0.67)							
Role-Physical (RP)	0.657	(0.70)						
Bodily Pain (BP)	0.398	0.490	(0.76)					
General Health (GH)	0.633	0.543	0.164	(0.72)				
Vitality (VT)	0.319	0.256	-0.074	0.381	(0.74)			
Social Functioning (SF)	0.430	0.559	0.380	0.268	0.107	(0.73)		
Role-Emotional (RE)	0.501	0.319	-0.011	0.219	0.266	0.207	(0.75)	
Mental Health (MH)	0.180	0.070	-0.287	0.172	0.715	0.128	0.413	(0.75)

Note: Values within parentheses indicate Cronbach's alpha value of each scale

Table 4. Pearson's correlation coefficients between the first and the second interview using the MOS 36-Item Short-Form Health Survey (SF-36) Bahasa Melayu language version.

Scale	Correlation (r)	P-value*
Physical Functioning	0.86	< 0.001
Role-Physical	0.90	< 0.001
Bodily Pain	0.69	< 0.001
General Health	0.83	< 0.001
Vitality	0.74	< 0.001
Social Functioning	0.60	< 0.001
Role-Emotional	0.76	< 0.001
Mental Health	0.81	< 0.001

*Correlation is significant at the level of 0.01; number = 50

DISCUSSION

To date, many researchers have evaluated and reported the reliability of an SF-36 in different language versions, ethnicities, or several illnesses [12-20]. The SF-36 Bahasa Melayu language version had an increased or constant Cronbach's alpha value for seven areas, except for the physical and social functioning area. A moderate to high positive correlation was observed between the first and second interviews for all the components. This study's Cronbach's alpha values for SF-36 Bahasa Melayu language version were 0.68, 0.67, 0.76, 0.72, 0.73, 0.75, 0.72, and 0.73 in interview 1 and 0.67, 0.70, 0.76, 0.72, 0.74, 0.73, 0.75, and 0.75 in interview 2 for PF, RP, BP, GH, VT, SF, RE, and MH, respectively. However, Cronbach's alpha values for PF and SF were reduced for Interviews 1

and 2. A similar reliability was observed for asthma patients and the general population of Malaysia, where Cronbach's alpha value for the SF-36 Bahasa Melayu language version was above 0.70 for all components. The similarities between the two studies are due to the similar age range and distribution of ethnicity, where both studies had a higher percentage of Malay individuals [10, 21]. Similarly, the Blue Mountain Eye Study showed a Cronbach's alpha value exceeding 0.70 for subjects presenting with visual impairment, which is quite similar to that found in the present study, even though there was a difference in the age range. The age range for the Blue Mountain study was 49-98 years, which is higher than that in this study [22]. Most patients with low vision are older individuals who have certain functional limitations due to age-related factors and systemic diseases. As



expected, low-vision patients' quality of life may differ from that of the healthy population who has no significant problem with eye sight, which might affect their physical functioning, emotion, and mental health [22]. Thus, this data for patients with low vision is essential as a guideline on how they actually function in society.

Interestingly, the SF-36 Bahasa Melayu language version showed good and acceptable Cronbach's alpha values for all functions except for PF and RP which was acceptable. The second interview also revealed similar Cronbach's alpha values. The good Cronbach's alpha values indicated that the SF-36 Bahasa Melayu language version is a reliable tool for determining general HRQoL in patients with low vision in Malaysia. However, the low Cronbach's alpha value for PF and RP may be due to visual impairments that can restrict mobility and other physical activities. Moreover, there are eye conditions, such as penetrating trauma, which can lead to visual impairment, and the SF-36 score is relatively lower for patients with ocular penetrating trauma [23]. Therefore, the SF-36 Bahasa Melayu language version will be a helpful tool for evaluating the general HRQoL in patients with visual impairment in Malaysia. The SF-36 Bahasa Melayu language version also showed good repeatability between the first interview and the second interview, with Pearson correlation coefficients ranging from 0.6 to 0.9. Thus, this study showed that SF-36 Bahasa Melayu language version shows good repeatability in determining the general HRQoL in patients with low vision in Malaysia.

The variability in age, sex, and race in the sample could be a limitation of this study. The lack of validity assessment of this questionnaire is another limitation, and we suggest that future studies should assess its validity by performing principal component analysis. Given these limitations, the results of this study should be interpreted cautiously. Hence, future studies with larger sample sizes are required. The strength of this study is that the inclusion of urban-dwelling low-vision patients for the SF-36 Bahasa Melayu language version survey is an innovative and meaningful way to improve understanding of health status in the management of low-vision rehabilitation. In future studies, it is recommended that low-vision patients from the rural population should also be included, and the age range should reflect the youth, working adults, and older individuals, to obtain better SF-36 in Bahasa Melayu language-based information on the health status of patients with low vision in Malaysia.

CONCLUSIONS

The SF-36 Bahasa Melayu language version had a Cronbach's alpha value exceeding 0.70 for BP, GH, VT, RE, MH, and SF, but not PF and RP, for both interviews. A

moderate to high positive correlation was present between the first and second interviews for all components of the SF-36 Bahasa Melayu language version. We found that the SF-36 Bahasa Melayu language version is reliable and repeatable. It is a useful tool for measuring health-related outcomes among patients with low vision in Malaysia.

ETHICAL DECLARATIONS

Ethical approval: This study received ethical approval from the Research and Ethics Committee, Universiti Kebangsaan Malaysia, UKM 1.5.3.5/244/NN0972009, and followed the tenets of the Declaration of Helsinki. All patients with low vision and parents or caretakers (for low-vision patients under 18 years old) provided written informed consent for participation in the study.

Conflict of interest: None of the authors have any conflict of interest to declare.

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